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Procedia - Social and Behavioral Sciences 180 (2015) 484 – 488

Procedia
Social and Behavioral Sciences

The 6th International Conference Edu World 2014 "Education Facing Contemporary World Issues", 7th - 9th November 2014

Inovation in education – fundamental request of knowledge society

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Abstract

Inovation in school refer at redefining the whole design of teaching, learning and evaluation process. In the present study we intend to identify in which way teachers are ready to implement didactic inovation in school and what is the impact in pupils' education. The sample of research was composed from 158 pupils. The research instrument was a survey composed from 20 multiple choice items. The results prove that, in pupils' opinion, many teachers accept the inovation in school, they are well-prepared to apply interactive didactic strategies in learning process, vut they have a really problem to use NTIC in school.

Peer-review under responsibility of The Association "Education for tomorrow" / [Asociatia "Educatie pentru maine"].

Keywords: Didactic process, Inovation in education, New didactic technology

1. Introduction

Notes defining characteristic of contemporary society are increasingly complex and reveal a paradoxical situation. On one hand, everyone appreciates the progress of the community in which we live: the evolution of science and technology, exponential growth in the volume of information, penetration of computers in all fields, cultural and spiritual evolution of the human being, the development of the world economy and so on. On the other hand, the progress that we have referred have brought a lor of problems that very few people would have expected: environmental degradation, reducing of natural resources, population growth and unequal distribution of number of

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Peer-review under responsibility of The Association "Education for tomorrow" / [Asociatia "Educatie pentru maine"].
doi:10.1016/j.sbspro.2015.02.148

people on Earth, diversification and worsening health problems facing the population, poverty in some areas and over-production in others etc. All these issues - known generically as a "problems of the contemporary world" - are *universal* (can be found in all countries and regions), *global* (affecting all sectors), *pluri- and interdisciplinary* (solving a problem is depending by the other one), *priority* (problems required to be solved quickly), *rapid and unpredictable* etc. (Mariana Marinescu, 2013, pp. 19-20). To overcome these obstacles, the school plays a fundamental role, but it is part of the system that governs the whole society. Therefore, it is imperative that school be permanently subjected to the process of reform and innovation, seen as a result of those changes which lead to increase the quality of education in all viewpoints (D. Okamoto et. al., 2011).

But innovation in education is more than solving economical or socio-cultural problems, or alignment to NTIC' standards. Innovation in education means to determine student to become his own education agent, or to think independently and responsibly. Specifically, this can be done respecting several indicators (Cucoş, 2006, p. 63, cited. Mariana Marinescu, 2013, p. 70):

- Learning to learn and use that competence during the whole life;
- Learning to experiment, to correct errors and to solve problems;
- Learning to have a critical approach to the avalanche of information;
- Learning to live in a constantly changing environment;
- Learning to cooperate with others to achieve common tasks.

We can see that innovation in education is one of the most important way by which school can meet the challenges of the contemporary world. We use to associate educational innovation with new information technologies (NTIC) with an important role in the modernization of schools and increasing the attractiveness of teaching process. Basically, we can not design a modern and efficient education without NTIC. According to M. Berthold et. al. (2012, p. 273), the main advantages of NTIC in education is that it can provide personalized and continuous learning, cover the students' interests and needs, allowing a better understanding of information, development a social interaction among peoples and so on.

However, innovation in education is not just the use of modern teaching technology. The process is more complex and involves the transformation of values that have to be provided, the information that have to be taught, the methods that have to be used in educational activities etc. Of course, innovation in education must take place simultaneously in all these components, any imbalance may compromise the idea of "educational curriculum" and may affect academic achievement of students (N. Matsuda and W. Cohen, 2014). Therefore, for a better understanding of innovation in education' significance, in this study we will focus on its main indicators: informational content, teaching materials and teaching / evaluation methods.

2. The study

2.1 The objectives

Based on the above, the aim of our research was to identify the level in which innovation in school (represented by informational content and teaching strategies) entered the Romanian educational system. The specific objectives of the research were: *(1)* analysis the impact of taught information for students, *(2)* identify the type of teaching strategies (methods and tools) used by teachers in the teaching process and *(3)* establish correspondence between teaching and assessment in school. According with those presented in the theoretical part of our paper, we believe that these are the main dimensions underlying educational innovation in Romania.

2.2 The sample

The sample of our research was composed from 158 pupils (N= 158) who learned in the inferior secondary learning system in two schools from Bihor County, Romania: Theoretical High-School "Onisifor Ghibu" Oradea and Gymnasium School No. 16, Oradea. The pupils' chronological ages were between 11 and 14 years old, 68,5% were girls and 31,5% - boys.

2.3 The methodology

The research method was represented by an analysis based on the survey and its instrument was composed from 20 multiple choice items, grouped in the following categories: communication of the educational objectives toward pupils; the quality and relevance of the taught didactic content; pupils' involvement in the teaching / learning

/ evaluation process by using adequate didactic strategies; the level in which the acquired knowledge could be used in practice; teachers' psycho-pedagogic and methodic competences. For this research, we took into consideration only those items which refer to the communication of educational objectives, their relevance towards pupils' taught informational content, namely the specific of didactic strategies used in the learning process. The mentioned multiple choice items have four answer options: always (4 p.), often (3 p.), rarely (2 p.) and never (1 p.). The quantitative interpretation of the results was made by computing the statistic frequency of the obtained answers from the pupils. The implementation period of our research was in academic year 2013 / 2014.

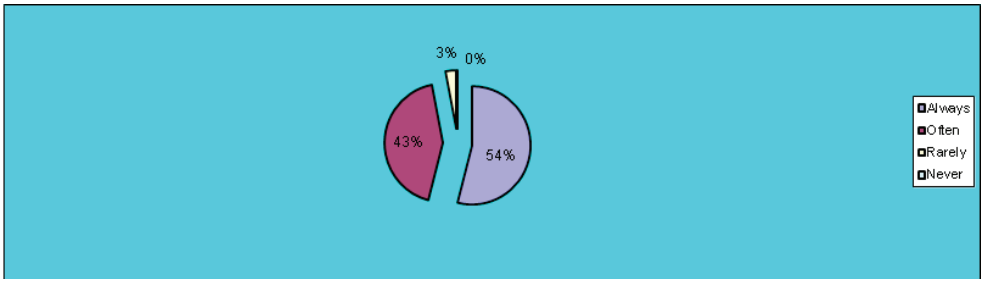

Fig. 1. Relevance of the knowledge acquired during the lessons

The first issue relates to the relevance of the acquired knowledge during lessons for students. Their responses indicate a clear tendency for them to say that what is learned in the classroom is useful and important, about 97% of respondents believing that this happens often or always. No option was directed to the variable "never" (Figure 1). The subject does not require a lot of comments, but in a future research we intend to explore what is the knowledge retention after graduation and their practice relevance during and after graduation.

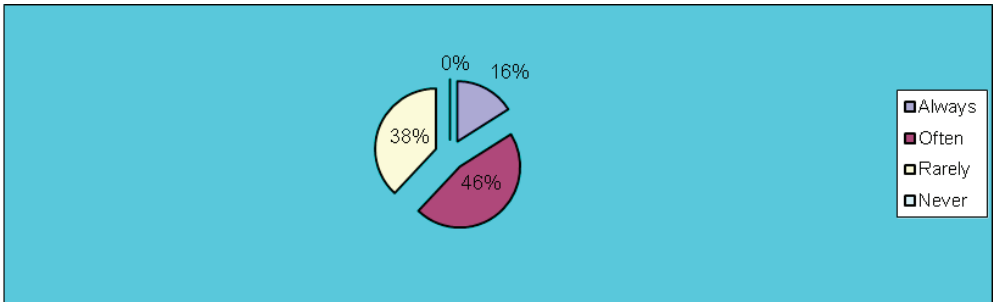

Fig. 2. The use of modern devices in education

More diverse are options regarding the use by teachers of new and modern teaching devices in education (Figure 2). Thus, only 16% of respondents believe that teachers do this always, while 46% of them say that only often teachers use NTIC. Interestingly, 38% of respondents said that rarely professors used modern technology in teaching. Indeed, in recent years, modern teaching technology deep into schools in Romania, but there are still plenty of educational institutions where technologizing remains a serious problem. In addition, there are a lot of teachers who are reluctant to use the NTIC, either out of ignorance or out of convenience, or because modern teaching devices mean not meet pedagogical objectives pursued. However, we believe that the use of modern teaching tools will become a necessity and increasingly more teachers will regard this as normal.

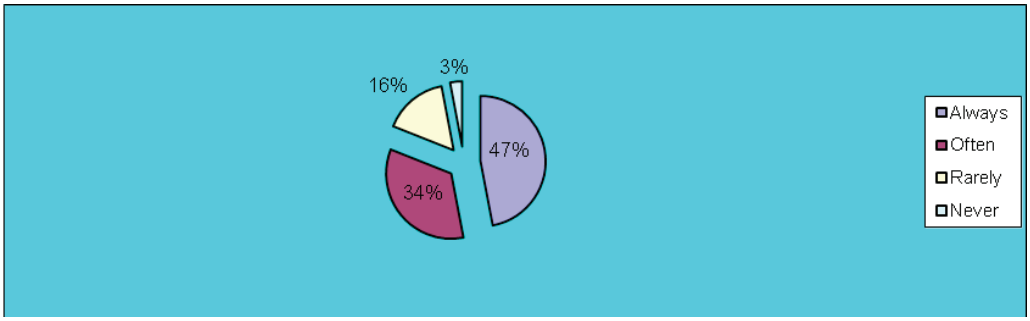

Fig. 3. The use of modern teaching methods

Analyzing Figure 3 we can observe that over 80% of students believe that their teachers use modern teaching methods based on action and cooperation, while, surprisingly, 3% of respondents believe that their teachers never taught by interactive methods. The results should not surprise us, since Romanian education reforms of the last 25 years put the accent on equipping teachers with interactive teaching / learning strategies, which they were able to use the dailly curricular activities. However, there are some scholar disciplines (such as, for example, Philosophy) and some groups of students (such as those with an introverted temperament) which is more suitable in expository teaching, that might explain share of 3% student responses.

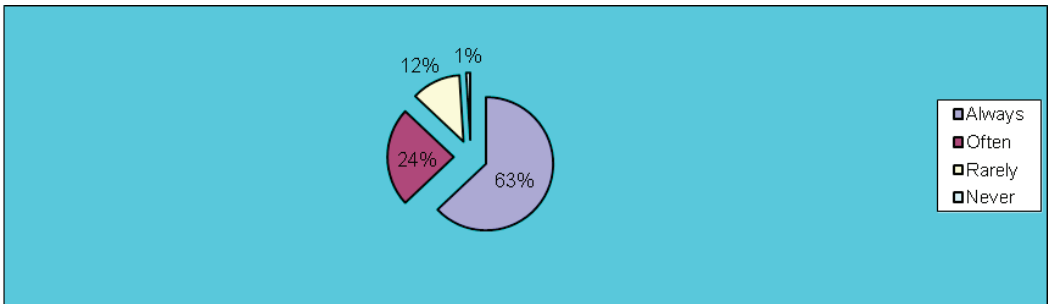

Fig. 4. The use of complementary methods of didactic evaluation

The same orientation is observed regarding students' opinion on how teachers use complementary methods to didactic evaluate (Figure 4). Thus, 63% of students say that their teachers had evaluated them using methods such as observation, project investigation, portfolio etc. The answers seem to correlate with those offered in the previous item, as long as teaching by interactive teaching strategies obliges teachers to assess their students using, also, interactive strategies. In this way, it would be creates the premises for students to form their own style of work based on active and responsible involvement.

Table 1. Average scores obtained in the four indicators that make innovation in education

No.crt	Item	Mean
1.	Relevance of the knowledge acquired during the lessons	3,47
2.	The use of modern teaching methods	3.42
3.	The use of complementary methods of didactic evaluation	3,18
4.	The use of modern devices in education	2,12

The data presented in Table 1 confirm the results of analyzed previous graphs. Thus, in terms of relevance knowledge acquired by students during lessons, or use by teachers of any interactive teaching / assessment strategies, the polarization of response is to maximum score, which means that very often teachers encourage active participation of students in lessons. We appreciate professors' openness to new educational agents involved and

their active participation, which creates the positive contexts for innovation in education, with favorable effects on the students' personality development.

Discussion and Conclusion

One aspect that deserves to be discussed relates to the issue of innovation in education viewed in a large sense. The progress of learning system is necessary to develop all its components: economic, social, pedagogic etc. Regarding this final aspect, it become necessary to develop all elements that make up the scholar curriculum: didactic objectives, informational content, teaching strategies, forms of organization of the educational process etc. The results of our study demonstrates that the best way that can do this one is the active and responsible involvement of all educational staff in teaching, by providing a matching approach of it. Thus, any instructive activity should starts with the design of specific, measurable, achievable, realistic and well-defined period of time objectives. Then, should be select the content that best matches the objectives and the ages and educational students' features. Selection and organization of teaching strategies should be done according with all the same principles. Our results show that, if professors taught using interactive methods (based on cooperation and the development of critical thinking), they will encourage their students' interactive learning and, desirable, to promote an interactive didactic evaluation based on complementary strategies, namely the self-evaluation / inter-evaluation. It will be created, in this way, congruence among all teaching component and it will promote the balanced development of students' personality and their active and responsible involvement in community life (Orţan, 2014).

The second issue to be discussed concerns to a particular approach of innovation in education - NTIC problem. Thus, introduction of new technology in school become absolutely necessary, but equally, it must be adapt to the educational and psychophysical students' characteristics. Scholar ergonomics deals with this aspect, we mean the relationship between professors / students and NTIC for the increasing of educational efficiency. In recent years, the progress of science and technology and providing schools with performance equipment led to improve the workplace characteristics where students and teachers operate. In this context, the main tasks of scholar ergonomics are to develop a set of rules needed to improve working conditions in accordance with the biological and psychological requirements of the agents involved in education (Blândul, 2010, p. 252-253).

In conclusion, we can say that students investigated in this research and their teachers are receptive to aspects of innovation in education and willing to meet the challenges facing contemporary society. According to the students surveyed, the knowledge acquired during lessons are useful and important for their future and strategies used in teaching / learning / assessment are actively-participative and encourages them to engage responsibly in their own training. Reserves arise regarding the use by teachers of NTIC, but in many cases this may be due to the lack of modern didactic technologies, especially in rural schools. Overall, we believe that the school is ready to successfully face the challenges of the contemporary world and this will create the premises for training of citizens able to actively integrate into the society of tomorrow and drive progress in all domains.

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